Camp Navajo (formerly Navajo Depot Activity)
Bellemont, Arizona Coconino County
Project Background

Contacts:

Nancy Lou Minkler, ADEQ FPU Project Manager	(602) 207-4187
David Christiana, ADEQ Hydrologist	(602) 207-4424
Rajendra Paode, ADEQ RCRA Permit	(602) 207-4165

Department of Defense Contacts

Guy Romine, Remedial Program Manager, NGB	(562) 795-2821
Cpt. John Morrow, Army Environmental Specialist	(520) 773-3208
Col. Larry Triphan, Post Commander	(520) 774-7161
Maynardo Ayala, U.S. Corps of Engineers	(916) 557-7771
Rebecca Godley, Dames and Moore	(602) 371-1110
Daniel Criswell, EHS, AZNG, DEMA Facilities Management	(602) 267-2663
D. Ken Green, Fluor Daniel, GTI	(602) 966-0808

IRP Project Status:

Separate contractors for the remediation of the Construction Debris Landfill #5, Sanitary Landfill, and Building 318/319 (which includes the Closed TNT Retention Ponds) have been selected. Draft Workplans for the sites have been received and comments sent out. Further characterization, such as installing new groundwater monitoring wells, groundwater sampling and soil gas samples, has begun. Trenching, to determine the extent of the Sanitary Landfill and the Construction Debris Landfill #5, has commenced. Currently, as much progress as possible on the characterization and remediation of the sites is being done before the ground freezes. The intended remediation will be bioremediation (composting) for the cleanup of the TNT contaminated soils around Building 318/319, and the Closed TNT Retention Ponds. The proposed remediation will be excavation of contaminated soils for transportation to a hazardous landfill for the Construction Debris Landfill #5, and a native soil cap for the Sanitary Landfill. The National Guard Bureau would like to remove Buildings 318 and 319 as a source of contamination, if the money can be appropriated.

Base Realignment and Closure (BRAC) funding is to be obligated for an initial cleanup of the OB/OD area. Current funding resources are insufficient to conduct activities required under the RCRA program. The remaining areas of concern at the Camp are being addressed through base wide investigations currently being conducted. Investigations have identified areas of concern that may require Remediation. Remedial efforts will be funded in accordance with Relative Risk Site Evaluation criteria developed by the Department of Defense.

The Army Material Command (AMC) and the National Guard Bureau (NGB) signed a Memorandum of Agreement (MOA) in August 1993 to clarify responsibility for environmental matters prior to official base transfer. Demilitarization activities have ceased as of September 1994. EPA and ADEQ completed the RCRA Facilities Assessment (RFA) and Visual Inspection at Camp Navajo in the Fall of 1993. As a result of this study, the list of Areas Requiring Environmental Investigation (AREEs) has been expanded and several sites have been designated as Solid Waste Management Units (SWMUs), eligible for the RCRA Corrective Action Process.

The EPA has also completed its Preliminary Assessment/Site Inspection (PA/IS) Reevaluation of Camp Navajo. The Report incorporated records contained in the 1991 Master Environmental Plan (MEP) and subjected available sampling data to Hazard Ranking System (HRS) scoring. In October of 1993, the EPA notified the AZANG that Camp Navajo did not score high enough to be placed on the National Priorities List (NPL). Therefore, with completion of the RFA and the PA/IS, the EPA has placed the facility in "No Further Action" status on CERCLIS. However, the Base is still subject to Federal (CERCLA), State (delegated RCRA, WQARF etc.) and local laws, and must comply with applicable protocols established by the Installation Restoration Program for all Federal Facilities.

Site Description:

The Navajo Depot Activity (NADA), designated "Camp Navajo" as of September 1993, is located at Bellemont, in north-central Arizona. It is 12 miles west of Flagstaff and 17 miles east of Williams. The facility encompasses 28,347 acres and is situated in heavily forested to grassy, gently rolling to steep hilly terrain approximately 7,100 feet above mean sea level. Facilities present at NADA include approximately 170 buildings of which 32 are currently used for administration, maintenance, operations, and storage. There are 776 igloo structures for storage of conventional (and formerly chemical) munitions. There is a demolition area in the southern portion, and buffer zones along the eastern and western borders of the base.

A list of areas for further evaluation was first presented in the U.S. Army Toxic and Hazardous Materials Agency Enhanced Preliminary Assessment Report. The following is a list of some areas currently under evaluation.

> Open Burning/Open Detonation Area (OB/OD) - There are several areas within a 5,000-acre zone that have been used for burning of propellant and detonation of obsolete munitions. This activity requires a Hazardous Waste Disposal Permit issued under RCRA authority to be on file with regulatory agencies. After official transfer of the facility from the Army Material Command (AMC) to the Guard Bureau (NGB) in September 1994, the Army's demilitarization mission ceased. Investigation and cleanup of these areas is required according to a RCRA Post Closure Permit; as mentioned previously, several sites identified as Solid Waste Management Units (SWMUs) may also require RCRA Corrective Action Measures. Potential contaminants include: explosive compounds such as TNT, DNT, RDX or Tetryl, nitrates, nitrates, phosphorous, metals, volatile and semivolatile organic compounds, poly-aromatic hydrocarbons, and unexploded ordinance (UXO).

Building 30 - Maintenance Shop - This building is a former vehicle and locomotive maintenance shop. Waste products form stripping and degreasing oils and other fluids are collected in separate 55-gallon drums for disposal. Staining from fluid leakage and spillage has been observed on the floor and in the mechanics' pits. This area will be further evaluated as part of the current investigation mentioned previously.

TNT Washout Lagoons - Three former evaporation/infiltration lagoons exist which were used to dispose of wastewater from the TNT Laundry and Washout facility. Sporadic detections of low levels of explosives related compounds have been recorded in monitoring wells installed for this investigation. There are no regulatory standards for these compounds. Closure of the site was estimated in 1991 to cost several million dollars. This area will be further evaluated as part of the current investigation mentioned previously.

Mercury Storage Areas - Mercury which was once used in fuses and timing mechanisms has been stored on the Post. An unconfirmed spill occurred in the past on a concrete pad in a warehouse. Traces of mercury were observed in the cracks of the concrete. Samples outside two mercury storage igloos were taken and analyzed during the Summer of 1993. The highest levels of mercury reportedly found in soil was 3.6 mg/kg. This level is well below recommended Health-based Guidelines (35 mg/kg) and also below the cut off level which requires the additional leaching analytical procedure (TCLP). Additional sampling of this area is included as part of the current ongoing soil and soil gas investigation. This area will be further evaluated as part of the current investigation mentioned previously.

Former Pesticide Storage Igloo (H-118) - This igloo was used to store several pesticides, including 2,4,5-T, 2,4-D, DDT and pentachlorophenol. The structure is no longer in use, but due to suspected release, will need to undergo decontamination and closure under RCRA. This issue will reportedly be addressed in a Plan submitted to RCRA Permits as part of the Post Closure process for RCRA sites under interim permit status.

Igloo Area C Drum site - Three drums containing pesticides residue, and numerous five-gallon cans and other debris were discovered in the area. Small areas of dead or absent vegetation were observed in the area. The three drums and other debris have been removed from the site. This area will be further evaluated as part of the current investigation mentioned previously.

Underground Storage Tanks - Remediation of several underground storage tank sites was conducted in FY93. According to the US Army Corps of Engineers (ACE), funding was allocated for the fourth quarter 1993 to finalize the "Remedial Report" (LUSTs), and additional monies have been requested and received for 1994 and 1995 Remediation.

Hydrogeologic Conditions:

Unconsolidated Quaternary alluvium is the youngest geologic unit at Camp Navajo and is comprised of alluvial and unrelated deposits. Volcanic rock of Quaternary and Tertiary age comprise the next oldest

geologic unit. Outcrops of this unit are predominantly basaltic and range from lava flows to cinder cones. There are approximately 13 volcanic vents within the facility's boundaries. Faults have been identified cutting Paleozoic sedimentary rock and Quaternary-Tertiary volcanic rocks. These faults are regionally important with respect to groundwater sources.

The regional water table, occurring in the Coconino-Supai sandstone aquifer, is encountered at approximately 1,270 feet in the one facility deep well. Several perched water tables, controlled by local geologic conditions, are present in the Vadose zone above the regional unconfined aquifer. These perched saturated zones have been identified at various depths to 350 feet and are the predominant source of groundwater in wells immediately adjacent to Camp Navajo. Very little information is known about flow directions and gradients in the perched aquifers overlying the Coconino aquifer, but it is likely they mimic topography. Within the Coconino aquifer, groundwater flow is probably north or northeast as it is in Flagstaff.

Fluorescein dye tests conducted by the U.S. Geologic Survey in 1951 concluded that there appeared to be a hydraulic connection between the shallow surface water sources on Base and the deep Coconino Aquifer; however, this hypothesis has never been substantiated.

Site History:

The Navajo Depot Activity was created in 1942 as a supply depot providing storage and limited maintenance of assigned commodities. The primary mission of the depot was to provide three functions as a reserve storage depot activity: facilities for storage of material - including explosives and other commodities such as Defense Logistics Agency strategic and critical material, ship and receive material by truck and rail, and conduct demilitarization and disposal of obsolete or deteriorated explosives and ammunition. A secondary mission is to support reserve training. The revised mission for the National Guard will be primarily a training mission, with the secondary support mission of leasing storage space to other Federal and State entities.

In 1982 the AZANG became the facility operator, using the Base primarily for training purposes, and contracting with the Army to continue demilitarization of obsolete weapons. Past and present missions have required the storage, handling, and use and destruction of a variety of hazardous substances and wastes. These activities have led to known and suspected contamination of several environmental media.

Environmental studies have been conducted at Camp Navajo dating back to December 1979. Most recent studies include the Enhanced Preliminary Assessment completed for the Department of Defense Installation Restoration Program. The report has identified areas for further evaluation and work is continuing. An Environmental Impact Statement has also been prepared, examining the effects and impacts of the planned Post closure. The upcoming final Master Environmental Plan should propose long range plans for remedial actions on the installation.

Environmental Contamination:

None of the areas of contamination at NADA appear to pose an immediate danger to human health, however, there are sites which require at a minimum further investigation if not remedial action. The initial list of areas for environmental evaluation can be found in the Draft Remedial Investigation/Feasibility Study Groups B, C and E SWMUs in the facility file under number E-4260.3.1. Types of sites include the following: ammunition demolition areas, ammunition workshops, munitions storage, munitions testing and training ranges, operations facilities (including automotive maintenance and fueling), hazardous materials storage, and solid waste disposal.

Groundwater contamination:

Known groundwater contamination of shallow perched zones includes petroleum contamination from a leaking underground storage tank site near the TNT Washout Facility, explosive compounds, nitrates and sulfates, nutrient-related compounds and zinc from leachate from the Former Sanitary Landfill, and metals contamination in wells down gradient from the Ammunition Workshops.

Potential groundwater contamination may exist from disposal of TNT contaminated wastewater and other liquid wastes in the TNT Retention Ponds, Former Open Burning Trenches, and Open Burning Ponds. A sinkhole may have provided a conduit to the deep aquifer for runoff from the TNT Wastewater Lagoons in the Ammunition Workshop Area. Shallow, perched, aquifers may also have been contaminated by past sewage treatment practices, as evidenced by the presence of nutrient-related compounds.

Surface water contamination:

Known releases to surface water include gasoline flushed from an underground storage tank to a drainage ditch, treated sewage effluent (under NPDES permit), and oil, grease, and water discharged to a drainage ditch prior to installation of an oil/water separator. One spring in the northwest quadrant of the Depot has reportedly been analyzed to contain radioactivity: both high alpha-emissions as well as some beta-emissions. It is not known at this time if this phenomenon is naturally occurring or manmade.

Suspected releases to surface water include wastewater from the TNT wastewater lagoons and old earth reservoirs and runoff from the Demolition and Ammunition Workshop areas.

Soils contamination:

Areas of soil contamination are too numerous for this briefing paper. For a listing, see the Enhanced Preliminary Assessment Report, the Draft Master Environmental Plan or the RFA Report, all on file with ADEQ Remedial Projects Section. Types of contaminants (known and suspected) include TNT and other explosive related compounds, nitrate/nitrite, phosphorous, lead, barium, petroleum products, paints/thinners, solvents, asbestos, PCBs, breakdown products from phosgene and cyanogen chloride weapons, acids, sewage sludge, mercury, pesticides, and unspecified drummed materials.

Air releases:

Known releases occur/have occurred from detonation/burning activities, past venting of phosgene and cyanogen chloride weapons, past emissions from the Deactivation Furnace, fumes from painting and paint drying activities, volatilization of mercury from past spills, volatilization of hydrocarbons from petroleum contaminated soils, landfill emissions, and asbestos from worn insulation.

Regulatory Status:

The Arizona Department of Environmental Quality is lending state assistance to the Department of Defense in their remedial activities being conducted under the federal Installation Restoration Program (IRP). Environmental issues at Camp Navajo require involvement of the Voluntary Sites Unit of the Remedial Projects Section, the Waste Compliance Unit, the RCRA Permits Unit, the Underground Storage Tanks Section, Air Permits, and appropriate Hydrology personnel.